

# PSEO & VEO Training Session

2024 LED Workshop - Jody Hoon-Starr & Raza Lamb

# Session Agenda

Length: 1 Hour – 3:45 to 4:45pm

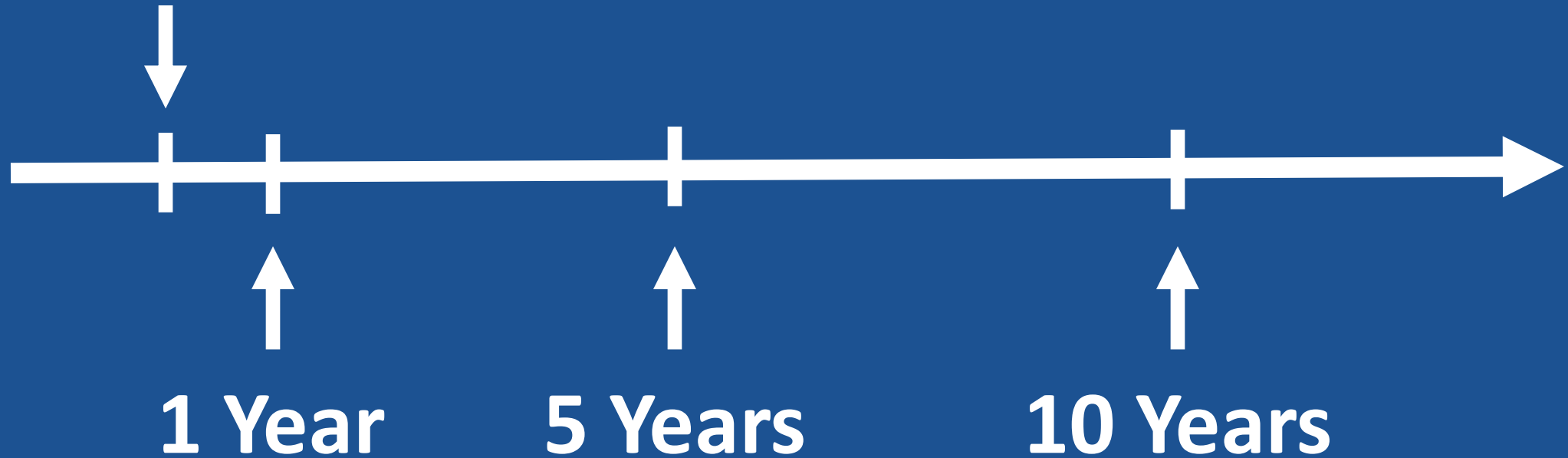
1. Fundamentals (5m)
2. PSEO Explorer Basics (15m)
3. Aggregates Overview (10m)
4. Things Explorer Can't Do (15m)
5. Future Vision (5m)
6. VEO Explorer (10m)
7. Q&A

# Fundamentals

Post-Secondary Employment Outcomes (PSEO)

# Basic Timeline

 Graduation



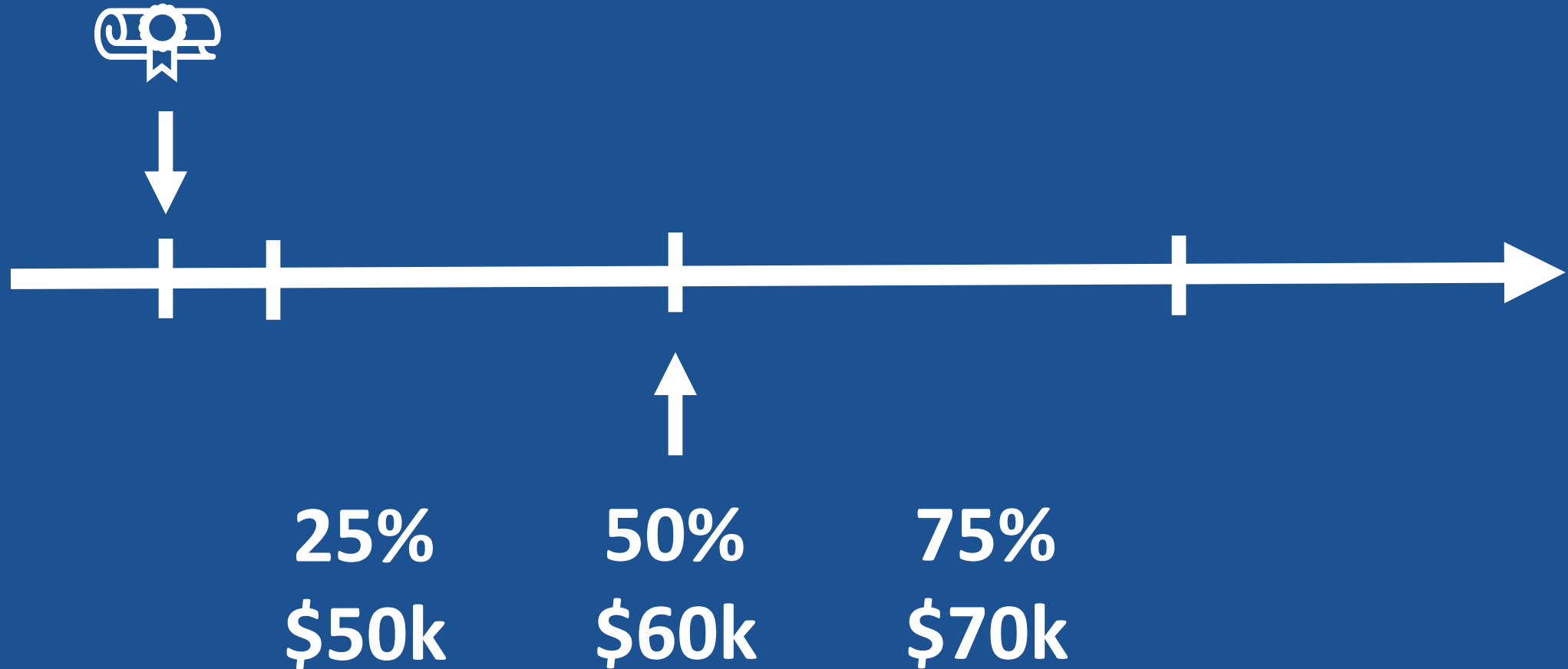
# Career Earnings



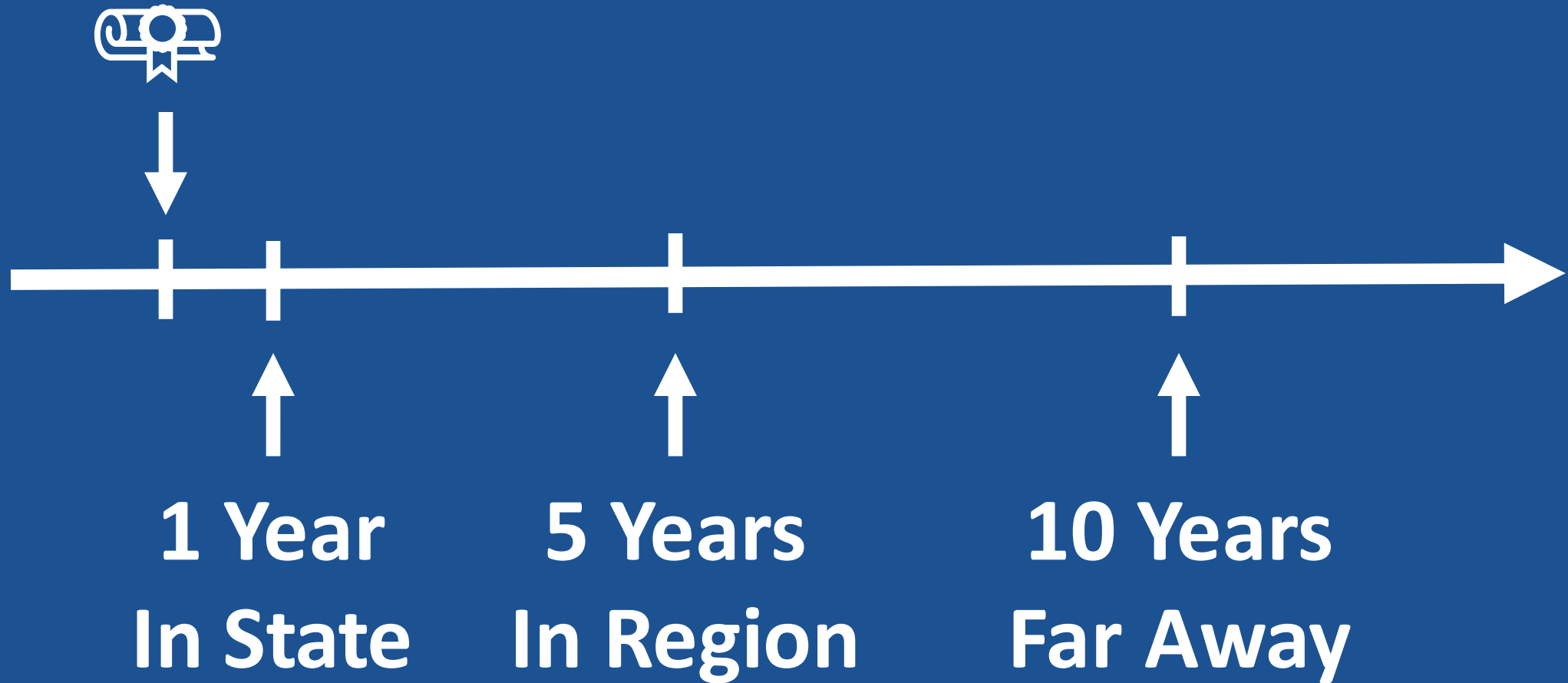
Graduation



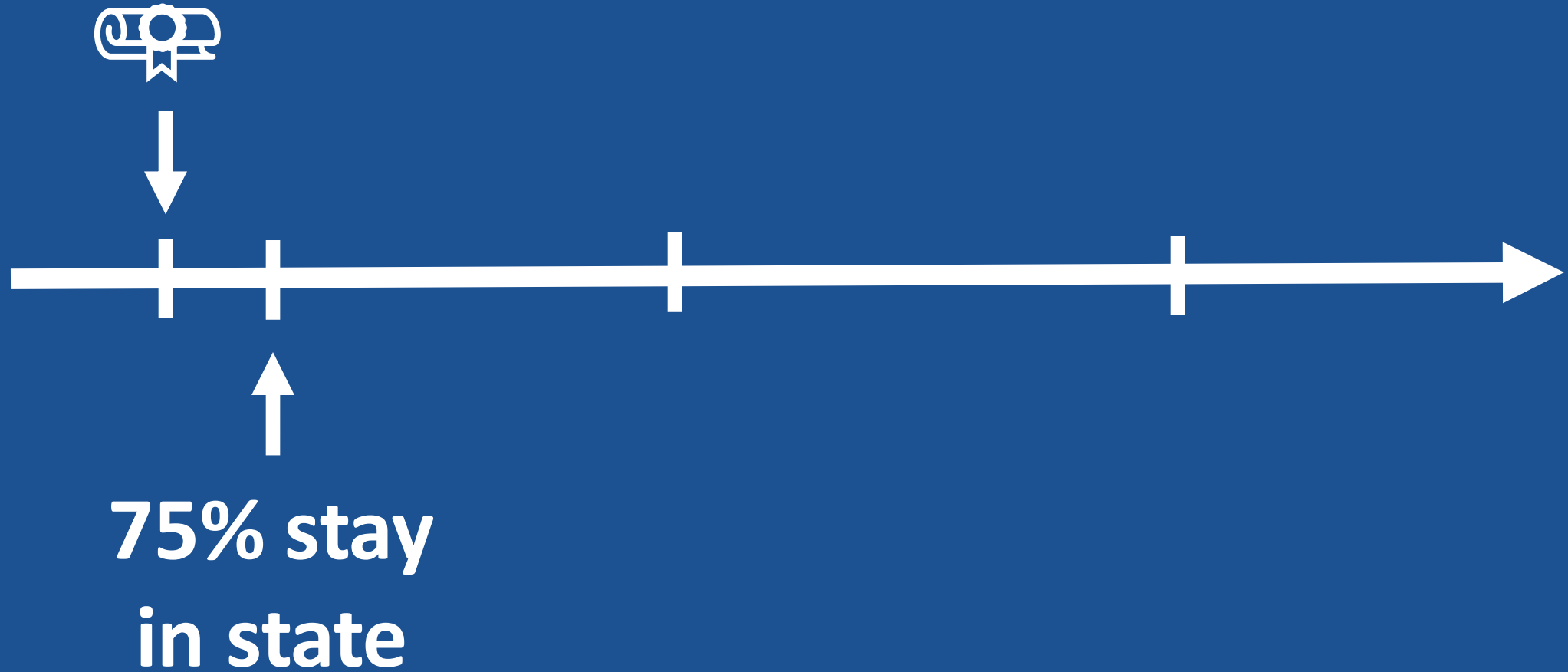
# Earnings in PSEO



# Career Location

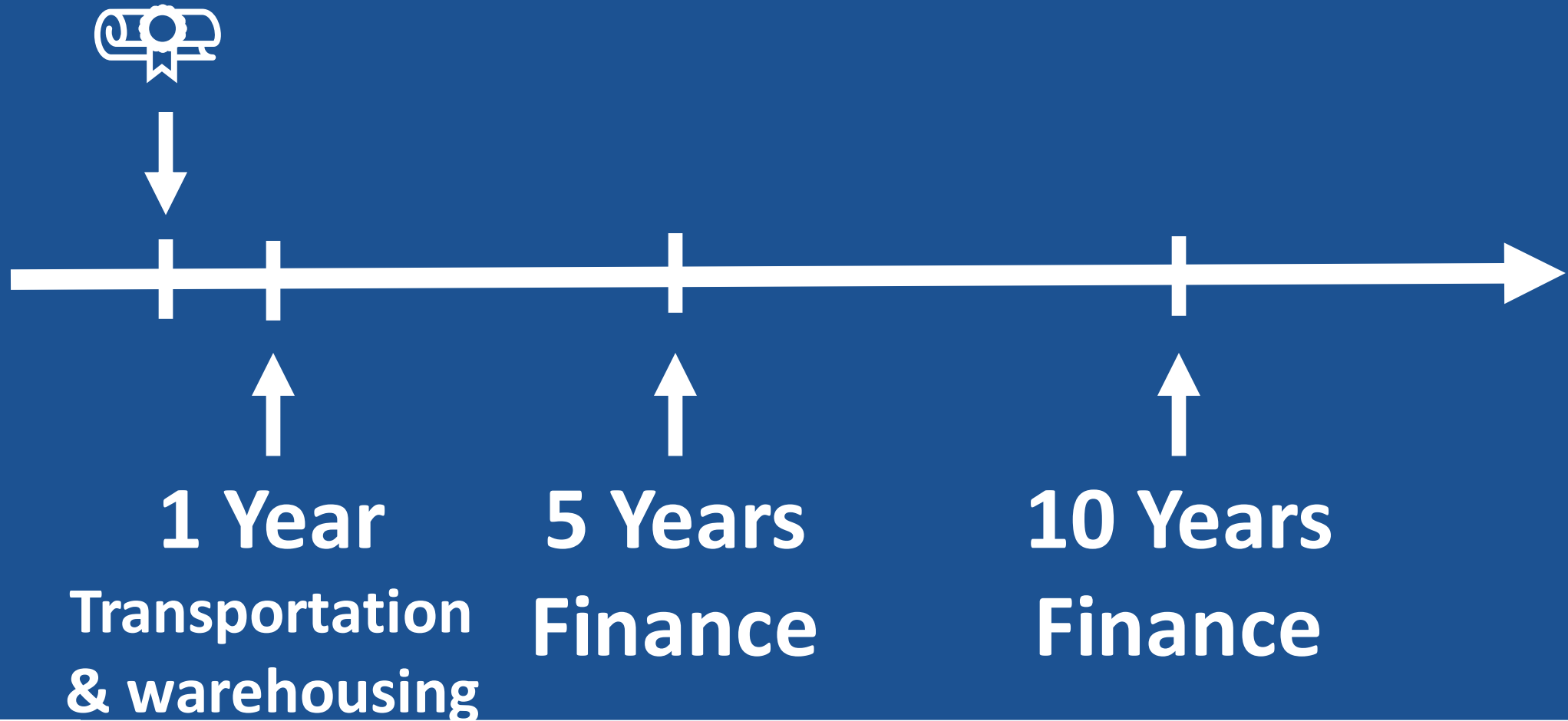


# Location in PSEO

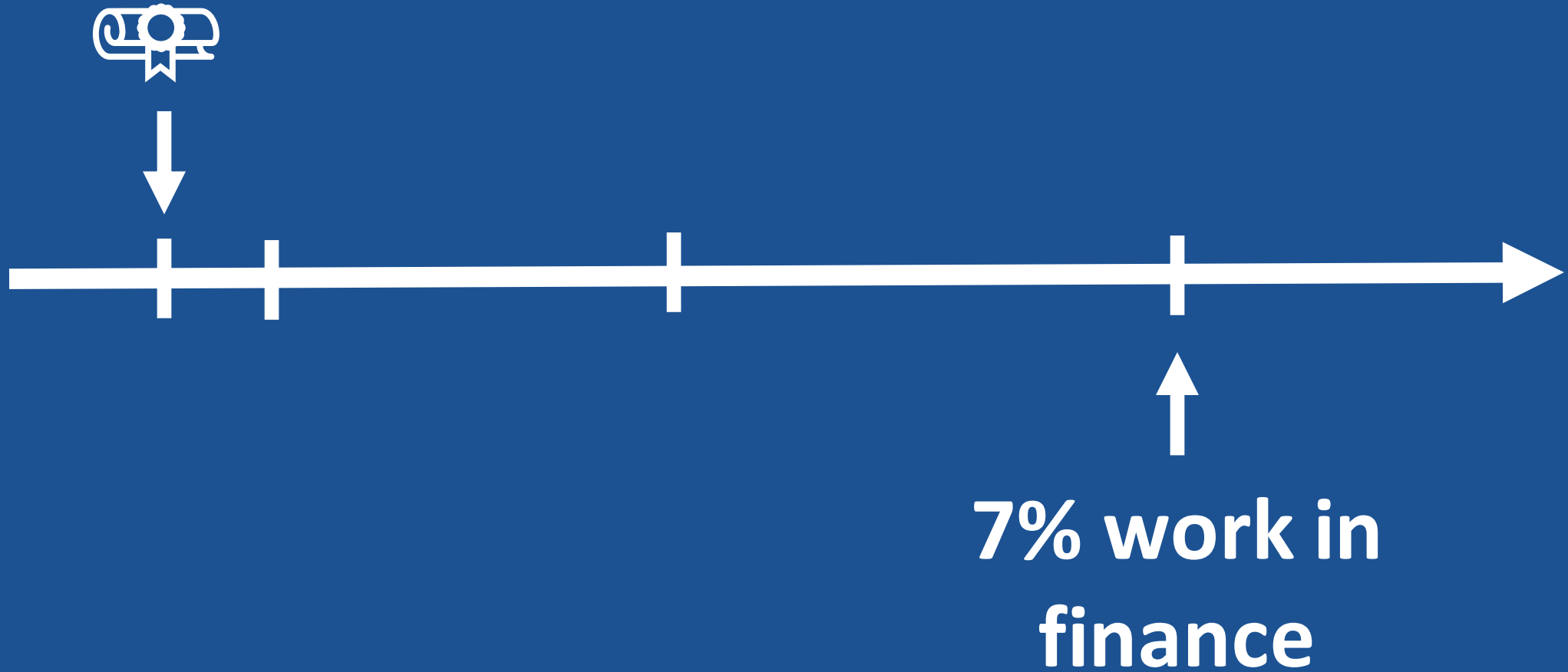




# Career Industry



# Industry in PSEO



# In the data

(entirely made up for this demonstration)

	25%	50%	75%
1-year	\$20k	\$30k	\$40k
5-years	\$50k	<u>\$60k</u>	\$70k
10-years	\$80k	\$90k	\$100k

## Earnings

Average grad makes \$60k

5-years after graduation

## Flows (aka counts/rates of grads)

8% of grads are working for a Transportation and Warehousing establishment 1-year after graduation

	Transport & Warehouse	Finance
1-year	<u>8%</u>	7%
5-years	6%	7%
10-years	5%	7%

# Data Coverage

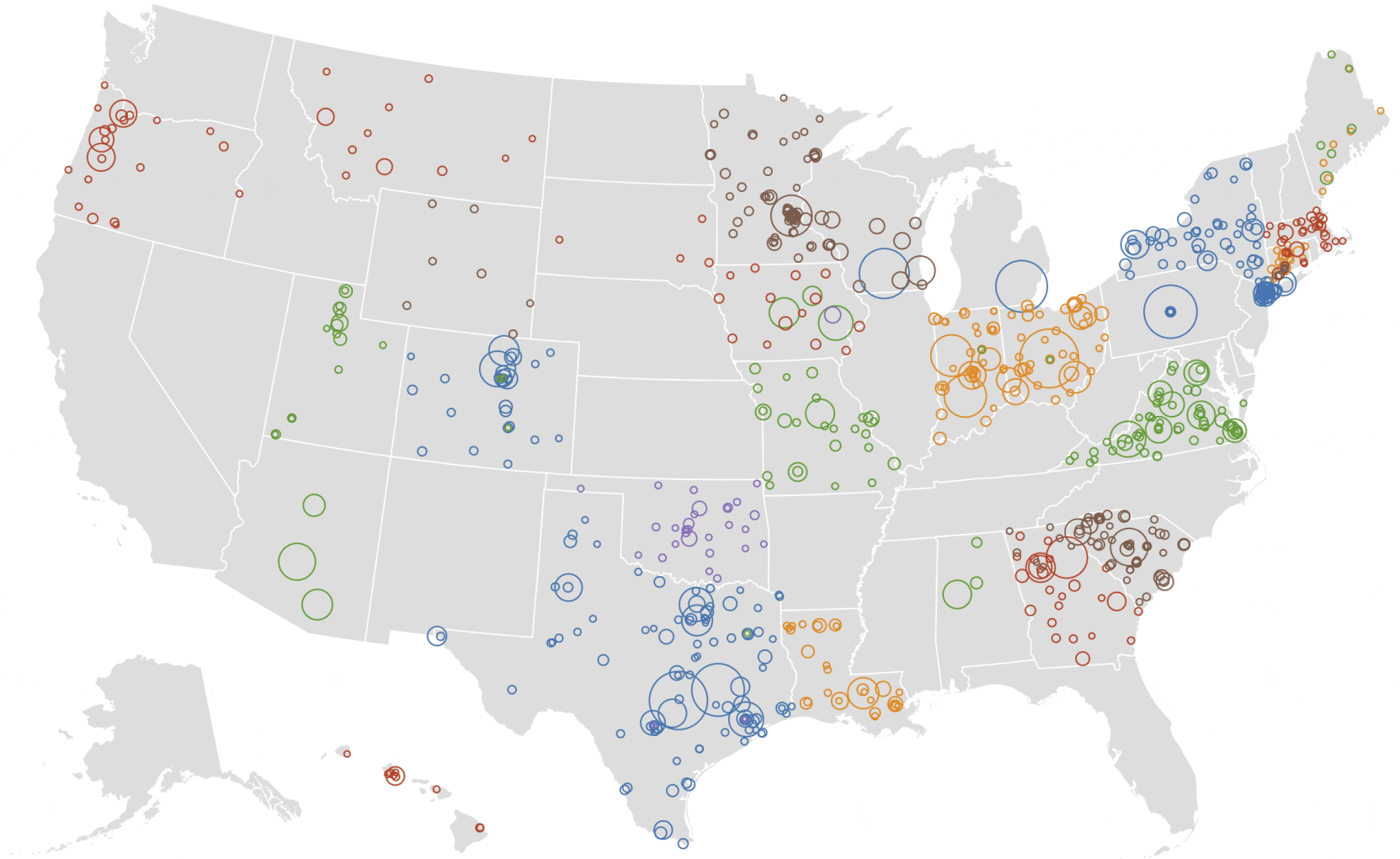
825 Institutions

~29% of all graduates

State coverage may vary\*

Degree level

Pause  2023 Jan 1



\*coverage details: [https://lehd.ces.census.gov/data/pseo\\_experimental.html](https://lehd.ces.census.gov/data/pseo_experimental.html)

# PSEO Explorer Basics

A web app to view PSEO data

# Demo

- **Generic Earnings: the 9-cell grid**
- **Program Specificity: all vs general vs detailed**
  - **Switching between them**
- **Flows to Industry**
- **Flows to Geography**

**Search "PSEO Explorer" in your favorite search engine**

# PSEO vs Other

- **College Scorecard**
  - Restricted to federal aid recipients, may not be representative
  - All enrolled students – no distinction for graduates
- **PayScale**
  - Voluntary self-reported
- **State Data**
  - Can't follow students who cross state lines
- **PSEO isn't perfect**
  - e.g. self-employment, ~96% of US private employment

# Aggregates Overview

Raza Lamb

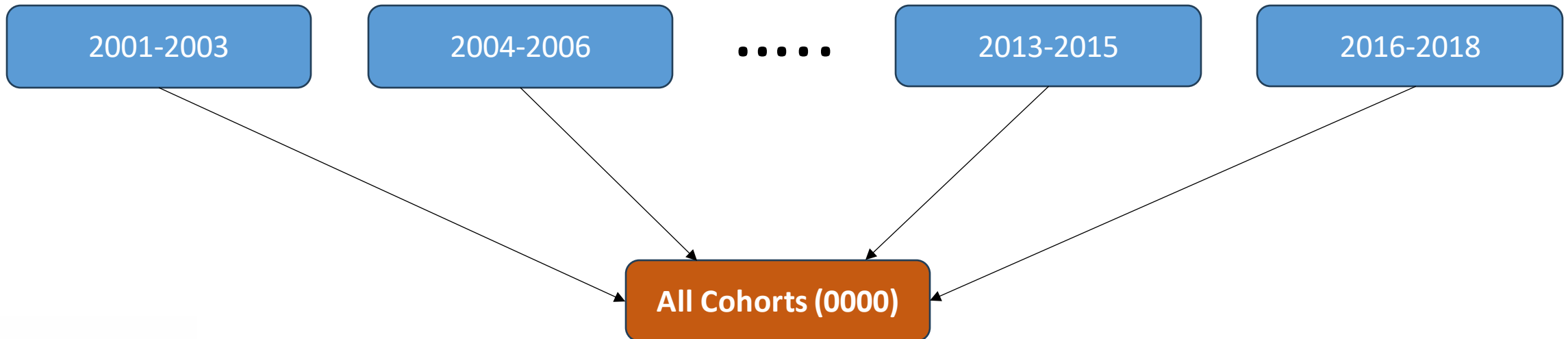


# What are PSEO Aggregations?

- **PSEO has defined levels of aggregation from individual data.**
- **Every time you look at data in PSEO Explorer, you're looking at an aggregation.**
- **Aggregations with hierarchies:**
  - **All degrees vs. 2-digit CIP code [Social Sciences] vs. 4-digit CIP code [Economics, Psychology]**
  - **All cohorts vs. individual cohort [2004-2006]**
  - **Institution vs. State (new!)**

# How Should I Think of Aggregations?

- Aggregations can also be thought of within the natural structure/hierarchy of the data.
- For example, in the case of cohorts, the all-cohort margin is a weighted average of all individual cohorts.

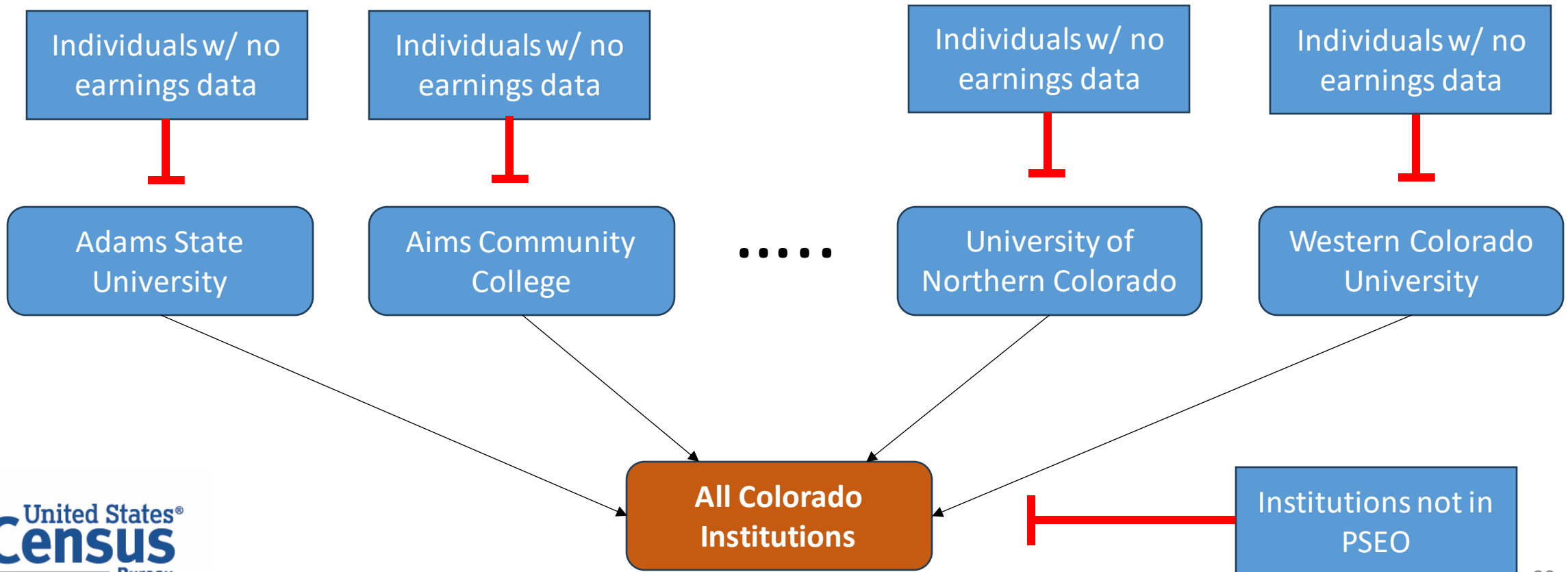


# Adding Context to Aggregations

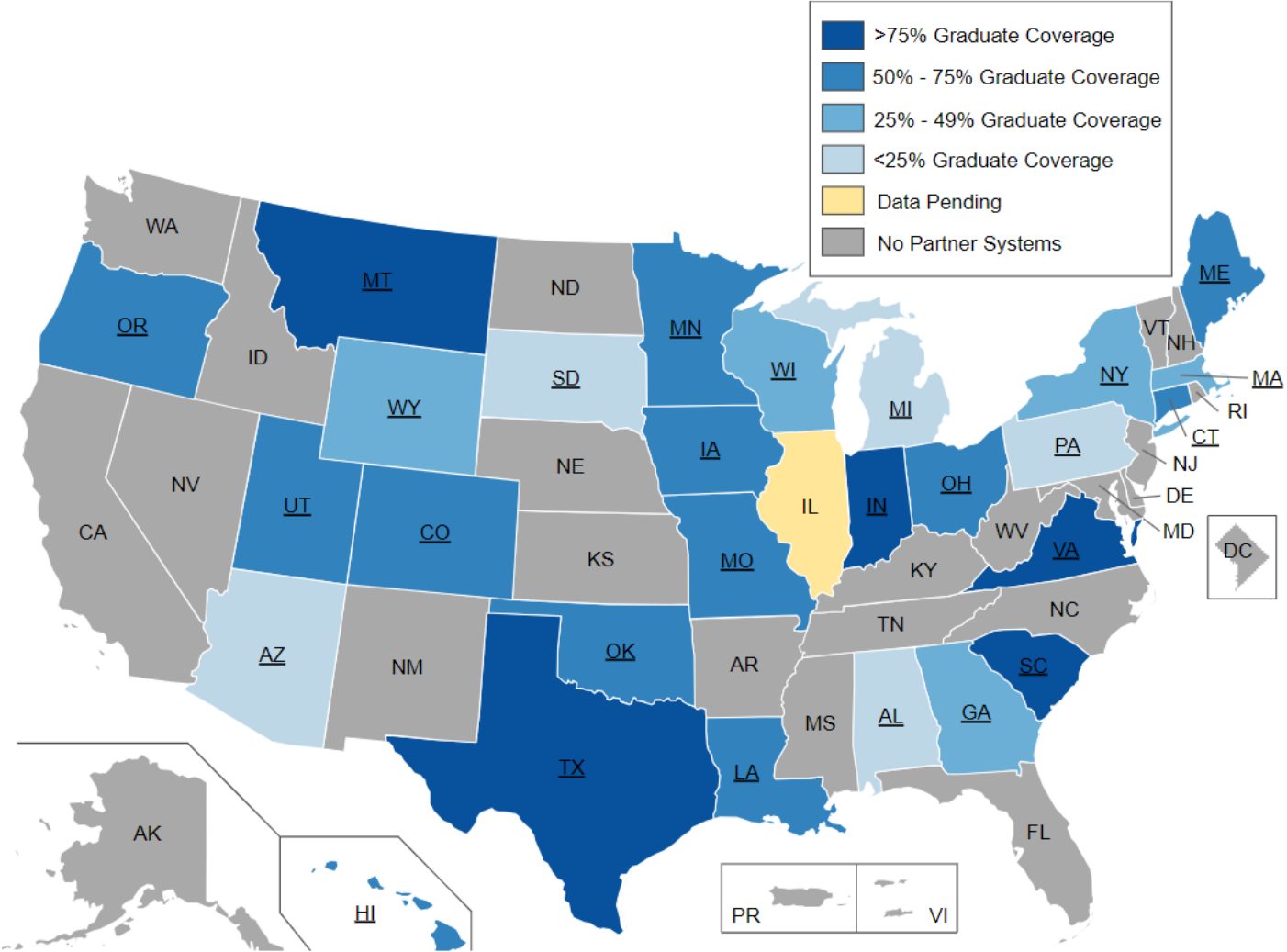
- **For a specific aggregation, it can be important to recognize what it contains and what it doesn't contain**
  - **For example: Earnings at SUNY New Paltz for Bachelor's Degrees in Education (all PSEO cohorts).**
  - **All cohorts are included in the calculation of earnings, but not all cohorts have data more than 1 year out.**

# Adding Context to Aggregations

- Understanding state aggregations requires an understanding of what is missing.



# Adding Context to Aggregations



# Time Check

It should be about 4:15pm (30 minutes left)

# Doing Things Explorer Can't Do

Using the excel files

# Resources

You're trying to do something using the web app.  
It's not what you want. Where to look next?

- Main webpage  
[lehd.ces.census.gov/data/pseo\\_experimental.html](https://lehd.ces.census.gov/data/pseo_experimental.html)

Which links to

- Data files  
<https://lehd.ces.census.gov/data/pseo>
- Definitions (Schema)  
[lehd.ces.census.gov/data/schema/latest/lehd\\_public\\_use\\_schema.html](https://lehd.ces.census.gov/data/schema/latest/lehd_public_use_schema.html)



# We want

**Demonstrating how easy this is**  
**No advanced skills required**

- 1. Top 5 degrees by earnings**
- 2. Change over time**
  - Earnings
  - Graduates
- 3. Horseracing**
  - Not something we do, but we know you all do

# Top N Degrees by Earnings

1. Grab the [co xls data file](#)
2. Earnings tab
3. Select the label row > filter
4. Select
  - label\_institution = University of Colorado Boulder
  - label\_degree\_level = Baccalaureate
  - label\_cip\_level = 4-Digit
  - grad\_cohort = 0000
5. Hide data that's not useful
6. Create a chart and extract some data

AutoSave Off | pseo\_co | Search | Jody Alexander Hoon-Starr (CENSUS/CES FED)

File Home Insert Page Layout Formulas Data Review View Help

Get Data: From Text/CSV, From Web, From Table/Range, Recent Sources, Existing Connections

Queries & Connections: Refresh All, Properties, Edit Links

Sort & Filter: Sort, Filter, Clear, Reapply, Advanced

Data Tools: Text to Columns, Remove Duplicates, Data Validation, Flash Fill, Relationships, Manage Data Model, Consolidate

Forecast: What-If Analysis, Forecast Sheet

Outline: Group, Ungroup, Subtotal

Comments | Share

A1 | Post-Secondary Employment Outcomes - Earnings, Colorado Institutions

Post-Secondary Employment Outcomes - Earnings, Colorado Institutions											
Source: United States Census Bureau											
Release: R2023Q4											
Data Schema: V4.11.1											
agg level pseo	label agg level pseo	inst level	label inst level	institution	label institution	Degree Award Level	label degree level	cip level	label cip level	cipcode	
26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	01	Certificate < 1 year	A	All Degree Fields	00	All Instructional F
26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	02	Certificate 1-2 years	A	All Degree Fields	00	All Instructional F
26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	03	Associates	A	All Degree Fields	00	All Instructional F
26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	04	Certificate 2-4 years	A	All Degree Fields	00	All Instructional F
26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	05	Baccalaureate	A	All Degree Fields	00	All Instructional F
26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	06	Post-Bacc Certificate	A	All Degree Fields	00	All Instructional F
26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	07	Masters	A	All Degree Fields	00	All Instructional F
26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	08	Post-Masters Certificate	A	All Degree Fields	00	All Instructional F
26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	17	Doctoral - Research/Scholarship	A	All Degree Fields	00	All Instructional F
26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	18	Doctoral - Professional Practice	A	All Degree Fields	00	All Instructional F

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## Earnings top 5: filtering the data

AutoSave Off pseo\_co Search Jody Alexander Hoon-Starr (CENSUS/CES FED)

File Home Insert Page Layout Formulas Data Review View Help

Clipboard Font Alignment Number Styles Cells Editing Sensitivity Add-ins

F1 label\_institution

	F	H	L	Y	Z	AA	AB	AC	
1	label institution	label degree level	label cipcode	y1 p25 earnings	y1 p50 earnings	y1 p75 earnings	y1 grads earn	y5 p25 earnings	y5 p50
6256	University of Colorado Boulder	Baccalaureate	Natural Resources Conservation and Research	20726	29084	39273	1392	33553	
6259	University of Colorado Boulder	Baccalaureate	Environmental Design	23315	33421	45453	1598	39689	
6260	University of Colorado Boulder	Baccalaureate	Area Studies	21537	31280	43298	142	28774	
6261	University of Colorado Boulder	Baccalaureate	Ethnic, Cultural Minority, Gender, and Group Studies	21616	30019	38999	380	30616	
6262	University of Colorado Boulder	Baccalaureate	Communication and Media Studies	25569	35739	47398	3056	40942	
6265	University of Colorado Boulder	Baccalaureate	Journalism	24080	33016	43489	2700	40212	
6267	University of Colorado Boulder	Baccalaureate	Public Relations, Advertising, and Applied Communication	31159	41654	53857	242		
6268	University of Colorado Boulder	Baccalaureate	Computer and Information Sciences, General	53326	69621	85587	210	70624	
6271	University of Colorado Boulder	Baccalaureate	Information Science/Studies						
6272	University of Colorado Boulder	Baccalaureate	Computer Science	52943	68092	86264	1128	78264	
6282	University of Colorado Boulder	Baccalaureate	Teacher Education and Professional Development, Specific Subject Areas	25983	33822	43416	128	30520	
6284	University of Colorado Boulder	Baccalaureate	Engineering, General						

Earnings Flows

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## Earnings top 5: extracting and visualizing

# Top 5 Degrees by Average Earnings

CU 1-year postgrad, 4-digit, all cohorts

- 1. Aerospace, Aeronautical, and Astronautical/Space Engineering**  
**\$72,007**
- 2. Computer Engineering**  
**\$70,036**
- 3. Computer and Information Sciences, General**  
**\$69,621**
- 4. Computer Science**  
**\$68,092**
- 5. Electrical, Electronics, and Communications Engineering**  
**\$64,647**

# Earnings over Time

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4. Select
  - label\_institution = University of Colorado Boulder
  - label\_degree\_level = Baccalaureate
  - label\_cip\_level = 2-digit
  - label\_cipcode = Mathematics and Statistics
  - grad\_cohort = All but 0000
5. Hide data that's not useful
6. Create a chart



AutoSave Off | pseo\_co - Saved to this PC | Search | Jody Alexander Hoon-Starr (CENSUS/CES FED)

File Home Insert Page Layout Formulas Data Review View Help

Clipboard Font Alignment Number Styles Cells Editing Sensitivity Add-ins

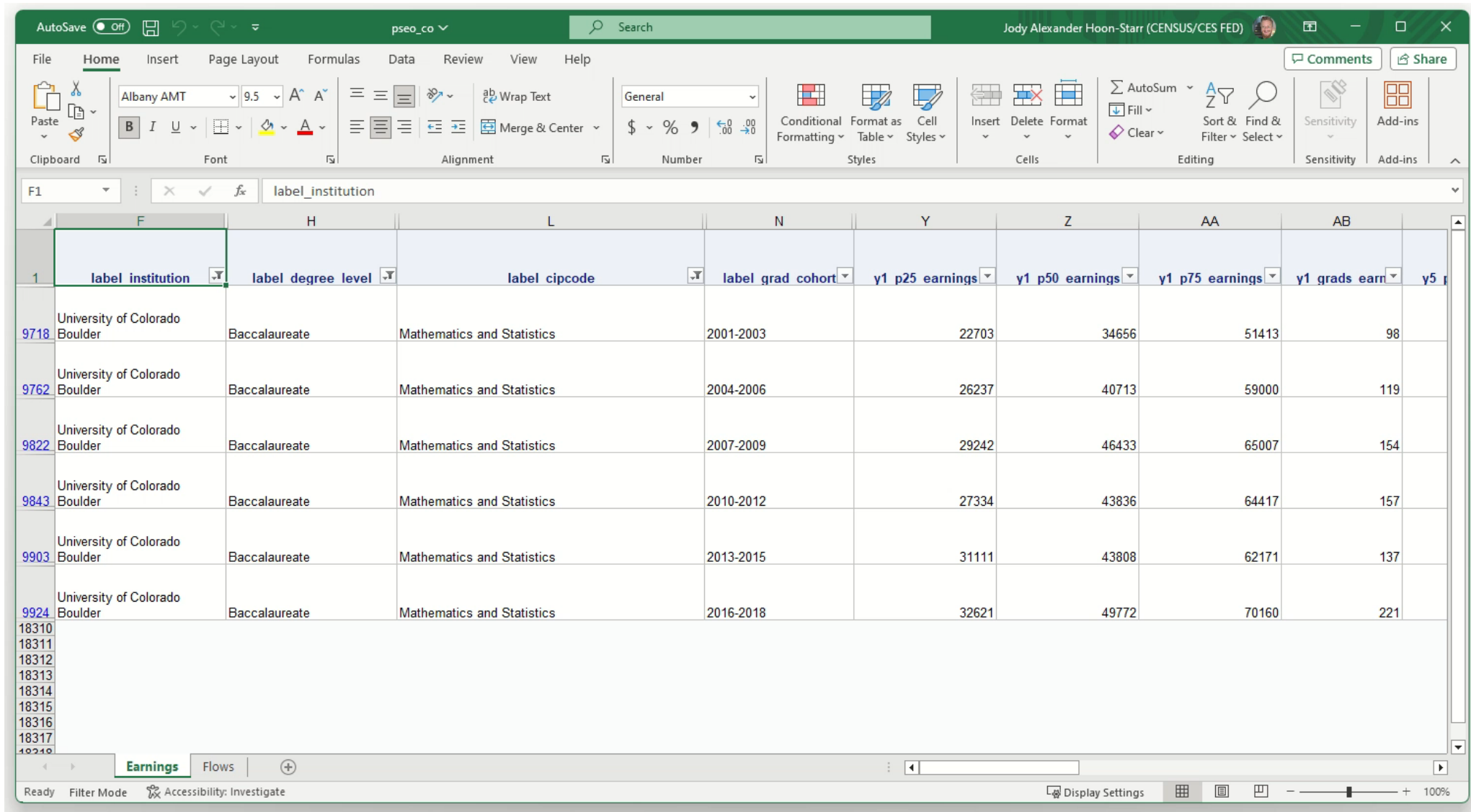
A1 Post-Secondary Employment Outcomes - Earnings, Colorado Institutions

1 Post-Secondary Employment Outcomes - Earnings, Colorado Institutions  
 2 Source: United States Census Bureau  
 3 Release: R2023Q4  
 4 Data Schema: V4.11.1

agg level pseo	label agg level pseo	inst level	label inst level	institution	label institution	Degree Award Level	label degree level	cip level	label cip level	cipcode	
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26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	17	Doctoral - Research/Scholarship	A	All Degree Fields	00	All Instructional F
	Degree Level * State of Institution		State of institution		Institutions in Colorado		Doctoral -		All Degree		

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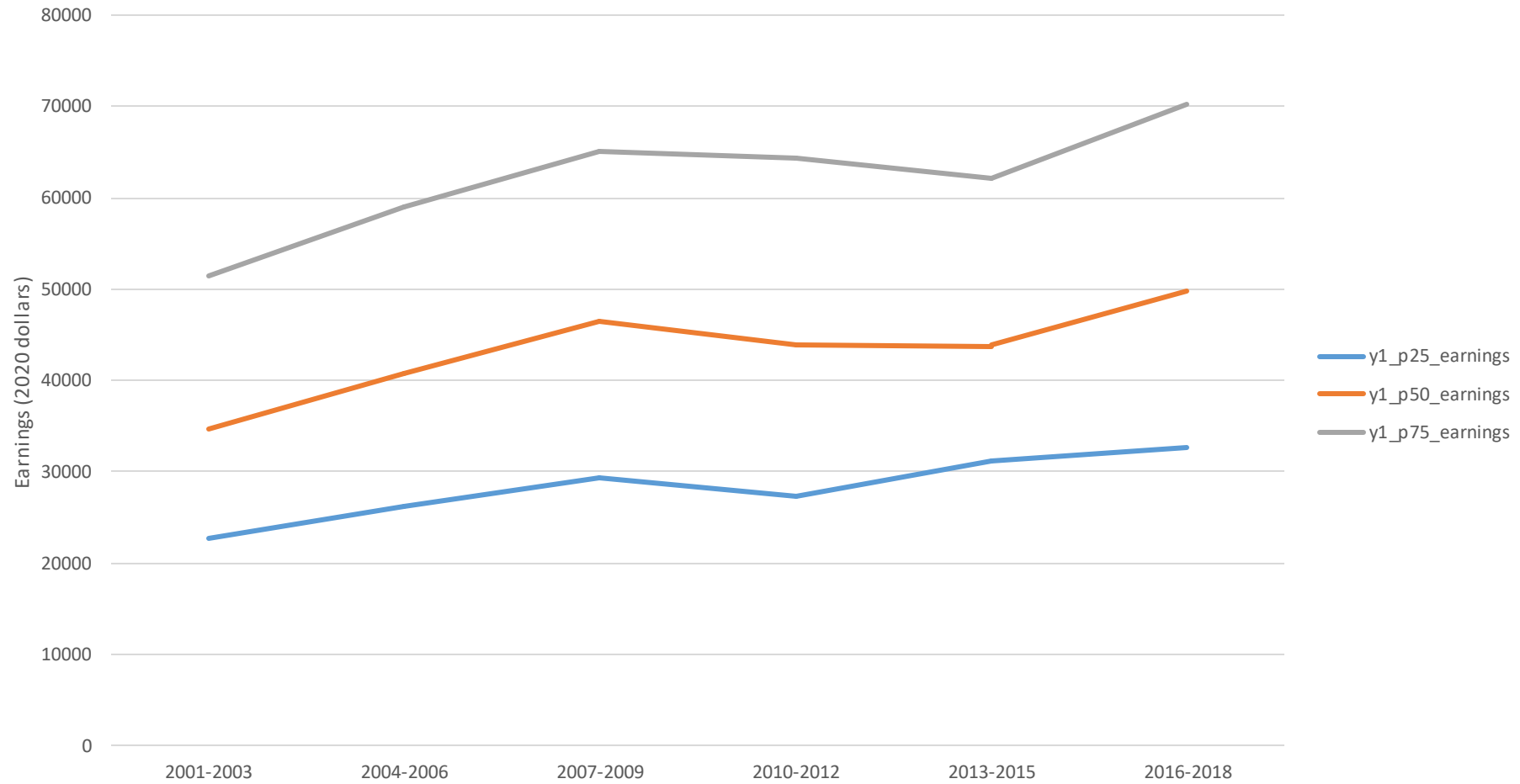
# Earnings over time: filtering the data



# Earnings over time: visualizing



### Earnings for CU Boulder BA Mathematics and Statistics Grads 1-year after Graduation



# Flows over Time

1. Grab the [co xls data file](#)
2. Flows tab
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D7 State of

1 Post-Secondary Employment Outcomes - Earnings, Colorado Institutions  
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 3 Release: R2023Q4  
 4 Data Schema: V4.11.1

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9	26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	03	Associates	A	All Degree Fields	00	All Instructional F
10	26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	04	Certificate 2-4 years	A	All Degree Fields	00	All Instructional F
11	26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	05	Baccalaureate	A	All Degree Fields	00	All Instructional F
12	26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	06	Post-Bacc Certificate	A	All Degree Fields	00	All Instructional F
13	26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	07	Masters	A	All Degree Fields	00	All Instructional F
14	26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	08	Post-Masters Certificate	A	All Degree Fields	00	All Instructional F
15	26	Degree Level * State of Institution	S	State of institution	08	Institutions in Colorado	17	Doctoral - Research/Scholarship	A	All Degree Fields	00	All Instructional F
		Degree Level * State of		State of		Institutions in		Doctoral -		All Degree		

Earnings Flows

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# Flows over time: filtering the data

AutoSave Off | pseo\_co | Search | Jody Alexander Hoon-Starr (CENSUS/CES FED)

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Comments | Share

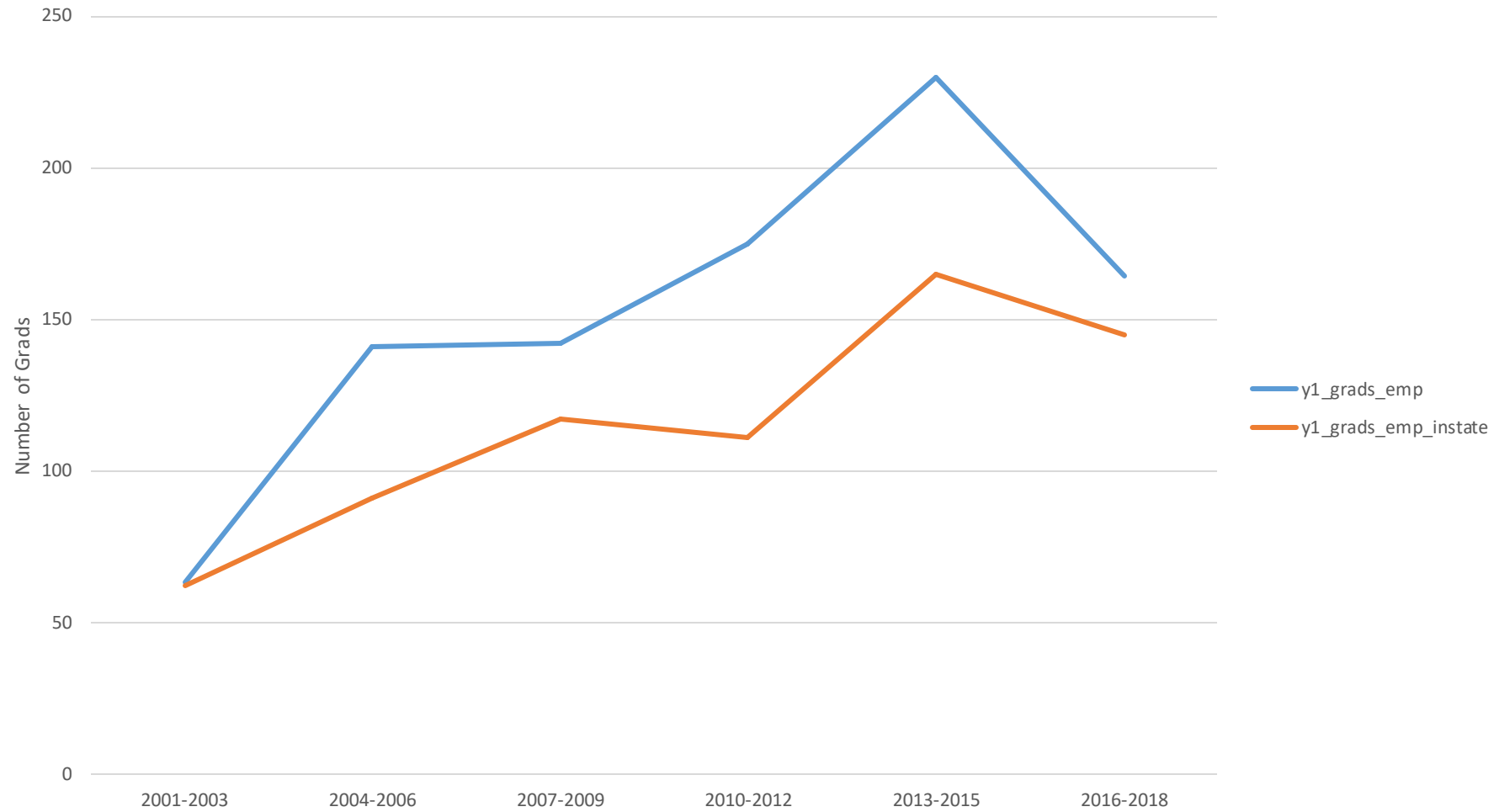
F1 | label\_institution

	F	H	L	N	Y	Z	AA	AB
1	label institution	label degree level	label cipcode	label grad cohort	y1 grads emp	y1 grads emp instate	y5 grads emp	y5 grads emp instate
4137	University of Colorado Boulder	Baccalaureate	Mathematics and Statistics	2001-2003	63	62	114	71
4182	University of Colorado Boulder	Baccalaureate	Mathematics and Statistics	2004-2006	141	91	164	92
4246	University of Colorado Boulder	Baccalaureate	Mathematics and Statistics	2007-2009	142	117	200	123
4268	University of Colorado Boulder	Baccalaureate	Mathematics and Statistics	2010-2012	175	111	226	118
4332	University of Colorado Boulder	Baccalaureate	Mathematics and Statistics	2013-2015	230	165	241	165
4353	University of Colorado Boulder	Baccalaureate	Mathematics and Statistics	2016-2018	164	145	.	.
79063								
79064								
79065								
79066								
79067								
79068								
79069								
79070								
79071								

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# Flows over time: visualizing

Graduates Employed In-state vs Out-of-state  
CU Boulder, BA Mathematics and Statistics Grads  
1-year after Graduation



# Horseracing

**In our apps we don't allow comparison of institution A vs institution B  
We know you do**

**Be careful of composition effects!**

**E.g. comparing engineering in  
CU Boulder (no petroleum engineering program)**

**vs**

**Colorado School of Mines (lots of petroleum engineering grads)**

# PSEO Sources and When to Use

1. PSEO Explorer Web App – Getting familiar  
[lehd.ces.census.gov/data/pseo\\_explorer.html](https://lehd.ces.census.gov/data/pseo_explorer.html)
2. Excel Files – Getting exactly what you want  
[lehd.ces.census.gov/data/pseo](https://lehd.ces.census.gov/data/pseo)
3. CSV Files – For automated processing  
[lehd.ces.census.gov/data/pseo](https://lehd.ces.census.gov/data/pseo)
4. Census API – To put on the web, on-demand processing  
[www.census.gov/data/developers/data-sets/pseo.html](https://www.census.gov/data/developers/data-sets/pseo.html)

# Time Check

It should be about 4:30pm (15 minutes left)



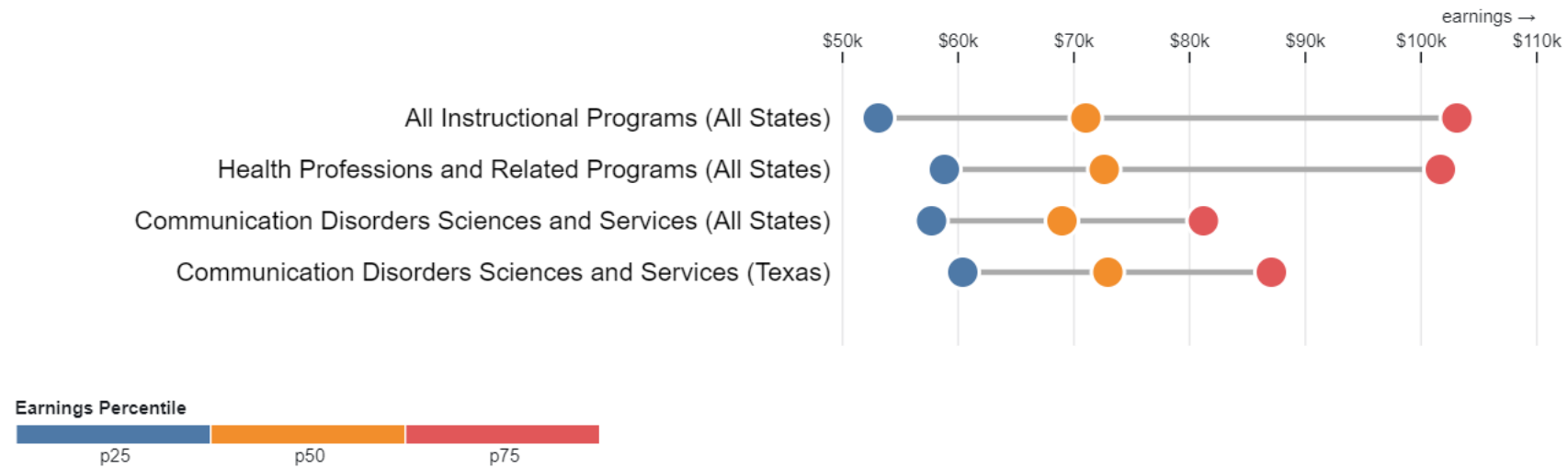
# Future

Things we're working on

# Context and Aggregates

## Earnings for Grads with a Doctoral - Professional Practice degree

Years Postgrad  y1  y5  y10



# Change over time is starting to get interesting

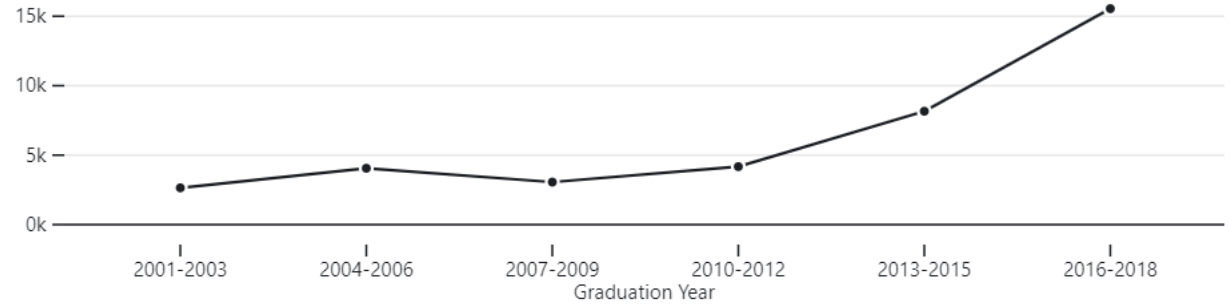
## All Texas BA Comp Sci

Program: Computer Science

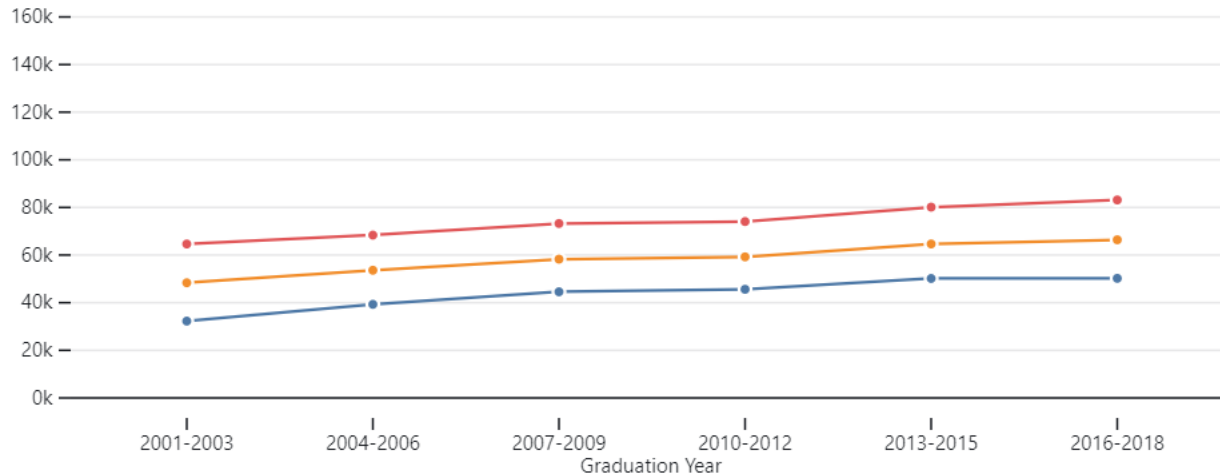
Degree Level: BA

Years Postgrad  y1  y5  y10

† Number of Employed Grads



† Earnings



Is this a true change?  
Composition effect?

Earnings are inflation  
adjusted

Earnings Percentile



# Veteran Employment Outcomes

VEO Explorer

# Career Earnings



Separation



Enlistment



1 Year

\$41k



5 Years

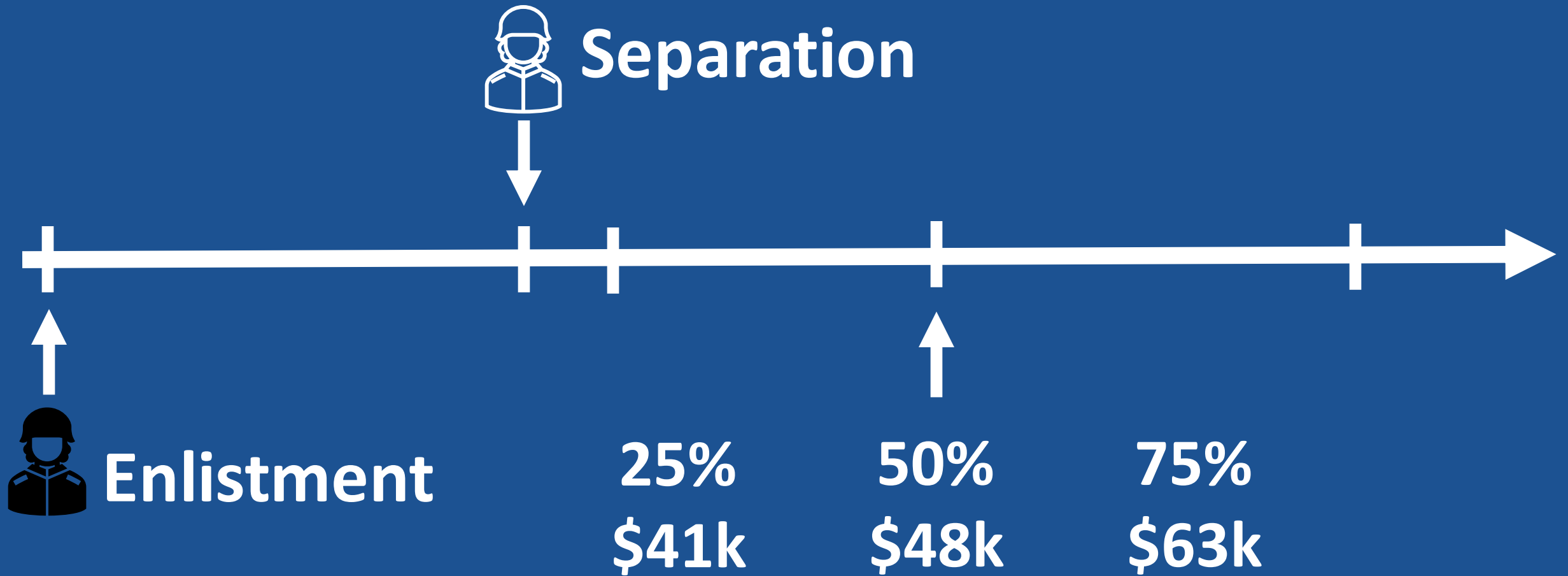
\$46k



10 Years

\$56k

# Earnings in VEO



# Earnings Breakdowns in VEO



## Enlistment

- Education
- Test scores (AFQT)



## Separation

- Military occupation
  - Detailed Military occupation
- Years of service
- Pay grade
- Age

## Other Breakdowns

- State
- Industry
- Race/Ethnicity
- Sex

# Q&A

Thanks for joining us today!